

Kere Baavi

Historical Evolution of a Metropolis's Waterscape

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Is geology destiny? The old rocks at Lalbagh lay testimony to a volcanic upheaval 2500 to 3200 million years ago, causing what was to become the city to rise to 920 metres above sea level. The nearest perennial river is about 100 kilometres away. Geology determined Metrology on this high plateau which caused a peculiar rainfall pattern termed bimodal by students of rain. May was a rainfall peak and then September, giving an annual rainfall of 970 millimetres (mm) in an otherwise surrounding arid landscape. Geology determined hydro-geology too; the water-bearing capacity of the groundwater was sufficient to hold onto substantial amounts of rain and then release it when wells were dug to extract the waters.

Human interventions have then shaped the landscape with water-retaining structures called 'tanks' being foremost among them; earthen bunds thrown across a valley or a stream to hold on to waters for irrigation purpose. Inscription stones carved in granite describe the construction of these tanks and wells. Some of the tanks date back to the 9th century. Tanks were primarily built for irrigation and wells built close by, sometimes for drinking water and sometimes for supplemental irrigation. Livelihoods and skills developed around soil and water such as the *Thiggala* community with its horticultural skills; the *Mannu Vaddars* with their earth-excitation knowledge have all contributed to the landscape of soil and water.

Technology. The relentless progress of technology has also played its part in the waterscape. Steam engines were first used to bring piped water from a reservoir at Hessarghatta on the Arkavathy river to the city. The advent of the borewell drilling technology in the late 1970's then led to an explosion in deep drilling with an estimated 500,000 borewells in the city with some as deep as 1800 feet. Water tankers roam around the city, especially delivering water and have come to be called the 'water mafia'. All the while the city grows in population and area.

Renaissance. The birdwatchers first point out the destruction of the tanks (also referred to as lakes) and especially the water quality. Committees were appointed, efforts mounted and with the courts' intervention, institutions created to save the tanks. Many tanks are lost but many are saved. Rainwater harvesting enters the lexicon and there is renewed interest in local waters. The question is - can we collect rain and recharge the aquifers? Enter the *Mannu Vaddars* now with a lesser livelihood opportunity, yet still around to clean and deepen old wells. They now learn the new art of digging recharge wells - wells

that take rooftop rainwater or storm-water and after filtration, send it to the shallow aquifer. The *Mannu Vaddars* want to dig a million recharge wells for the city, to push filtered rainwater into the aquifer, and to restore the memory and functionality of the dug well. They now have dug at an estimate around 200,000 recharge wells. Here are some of the stories of these old wells and recharge wells. As they say, the battle of civilization and society is one of memory and forgetfulness.

The following water stories from across the metropolis are taken from my Facebook page (<https://www.facebook.com/zenrainman>).

The return of the dug well and why should cities look at rejuvenating the shallow aquifer. March 02, 2018 (reshared on March 02, 2022)

The set of 24 flats needed water. The BWSSB lines do not reach this part of the city. The builder drilled a borewell to a depth of 1100 feet.



There was water for half an hour and about 500 litres of it. That's it and the borewell gave up its ghost. Enter Peddanna and team from the *Mannu Vaddar* community. The builder hired him to clean a 40-foot deep well, abandoned and filled with rubbish. The team started to empty the waste debris from the old well. At 30 feet they struck water. The well yields 17,000 litres of water a day and good quality water at that. The builder has also dug another well in the apartment. Now the new well too has water. He picks up rooftop rainwater from the 8,000 square feet roof, filters it and recharges the aquifer directly



through the well. Kaikondarahalli lake, cleaned up by the community and government, is the big brother of recharge in the area. The lake rejuvenation has been a boon to the aquifer in the area. The builder agrees that water metering for each individual flat, separate plumbing lines for the toilets and perhaps an STP to treat and recycle waste water would have helped a lot more. We need to get back to the conversation between the lake, the shallow wells and the community.



The tank and the well. September 01, 2021

In the semi-arid land with an average rainfall of 700mm and with 7 out of 10 years with below-average rain, drought was endemic. About 1200 years ago the people who occupied the land learnt to throw an earth embankment over a valley and hold on to the waters for 3 to 6 months. Sometimes the whole year in a good monsoon. The waters percolated the shallow phreatic zone and the old people dug wells. The wells filtered the waters from the tank and made it potable. The wells were also closer to the habitation. The tank waters were for irrigation, for the cattle, and for washing clothes. The well water was for drinking and cooking. Sometimes utensils and clothes would be washed too. Amarnath is a farmer from the village.



We discuss the merits and the need to clean the wells. It is a heritage from our forefathers, he agrees. It could be useful during emergencies when the borewells fail and when water may be needed for domestic needs. A grill on top will prevent waste being thrown in. We admire the top stone work in particular, cut so beautifully in a curvilinear shape. The well looks freshly made and not the hundred year history it has. Is the well really needed or is it an artefact of the past? Is nostalgia, that powerful drug, driving a romanticised need to revive it? Here are two wells close to each other. The same underground aquifer divided by a rather obnoxious caste system on the top. One well for one, the other for the other group. Can the wells be revived for all people together? The attempt will be made. Once more a tilt at the windmills.

Raghu and Rajappa, well diggers call. May 27, 2022

They are in a temple in South Bengaluru. A well needs to be cleaned. A turtle is in the well. It is lifted up and placed in water gently. The waters from the well pumped out. The silt and debris accumulated and removed. Potassium Permanganate added. The groundwater table is high and the aquifer feeds the well with lots of water. The turtle is reintroduced into the well. The temple has water for rituals and for visitors. Another job done by the well diggers whose livelihood depends on this work. If a million wells for recharge are built, if those that exist are protected, recharged and kept functional there should be no water crisis for the city.



The story of a well. August 28, 2022

Transit Oriented Design is the new urban planning and design tool making its way through city planning policies and investments. This is broadly the story of groundwater, especially the shallow aquifers in urban areas, one of lack of understanding and neglect. Ramakrishna sends me the photos and news.



The community here had required assistance in cleaning up an old well filled with garbage. Ramakrishna and team had cleaned it up, disinfected it and brought it back to life. The community started using these waters to supplement their requirements. Now a metro line will run below this well. The metro has served notice and will close this well. The roads we lay, the flyovers we build, the optical fibres that we place, the metros we dig all disrupt surface water and groundwater flows. Till we carefully think about the impact on water in all our infrastructure designs we will cause water shortages, flooding, waterlogging and scarcity all in the same city at the same time.



Note: All pictures in the article were taken by the author.

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